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NOTES FROM PACIFIC COAST OBSERVATORIES.

The Orbit of the Short-Period Binary Star A 88.

The double star A88 (R.A. = $18^h\ 33^m\ 19^s$; Decl. = —3° 17′; magnitudes = 7.2, 7.2; spectral type = F 8) was discovered by the writer with the 36-inch telescope in 1901. Measures on three nights gave the position:

1901.56 338°.3 0″.14,

and the mean of measures on three nights in the following year was found to be:

1902.66 318°.1 0″.12.

The rapid motion indicated by these results led me to measure the pair annually. The observed angular motion has continued to be rapid, averaging almost 30° per year, and the position of the companion is now nearly the same as at the time of discovery. Three nights' measures in the present year give the position:

1912.57 356°.1 0″.15.

The data for an approximate orbit are thus available, and from them I have derived the following system of elements, using graphical methods:

$P = 12.12$ years
$T = 1910.10$
$e = 0.273$
$a = 0''.176$
$\Omega = 2^\circ.4$
$i = \pm 62.4$
$\omega = 270.0$
Angles decreasing

Measures of the apparent ellipse give the values:

Length of major axis = 0″.337
Length of minor axis = 0 .163
Distance of star from center = 0 .022
Position angle of major axis = 1°.9
Position angle of periastron = 92.4

The pair is always difficult to measure, even with the 36-inch refractor, for the maximum distance between the components is only $0''.17$, the minimum value being $0''.07$. For this reason, probably, measures have not been made, so far as I am aware, by any other observers, and my orbit necessarily rests entirely upon my own observations.

The elements given are to be regarded as preliminary only, but the general form of the apparent ellipse is well defined. The orbit represents my measures as well as could be expected in a pair of this character, the residuals in distance falling within the limits $\pm 0''.03$, and the residuals in angle, reduced to arc measure, being considerably smaller (except for the year 1904, for which the residual is $0''.05$).

Only three other visual binary stars—δ *Equulei,* 13 *Ceti* and κ *Pegasi*—are known to have shorter periods of revolution than that found for A 88. R. G. AITKEN.

December, 1912.

POSITION OF NOVA GEMINORUM, 1912.

Two observations of last year's *Nova* made with the meridian circle on January 27th and 29th, give the position referred to mean equinox 1913.0:—

R. A. $6^h\ 49^m\ 15^s.773$; Decl. $+32°\ 15'\ 1''.64$; Epoch 1913.08.

Two observations were obtained last year, immediately following the receipt of the announcement of discovery in March. Referred to mean equinox 1912.0, the position was:—

	$6^h\ 49^m\ 11^s.796$;	$+32°\ 15'\ 5''.63$;	Epoch 1912.22
Precession	$+3.896$	-4.27	
1913.0	15.692	1.36	

Comparison of the results, differing ten months in epoch, gives no indication of change of position. The drop in brightness, from fifth magnitude in March, 1912, to eighth magnitude now, would produce an effect upon the observed transit of the *Nova* of about one third of the right ascension difference, due to magnitude equation (three units at $0^s.008$), and the outstanding differences are not greater than might be due to probable errors of observation. R. H. TUCKER.